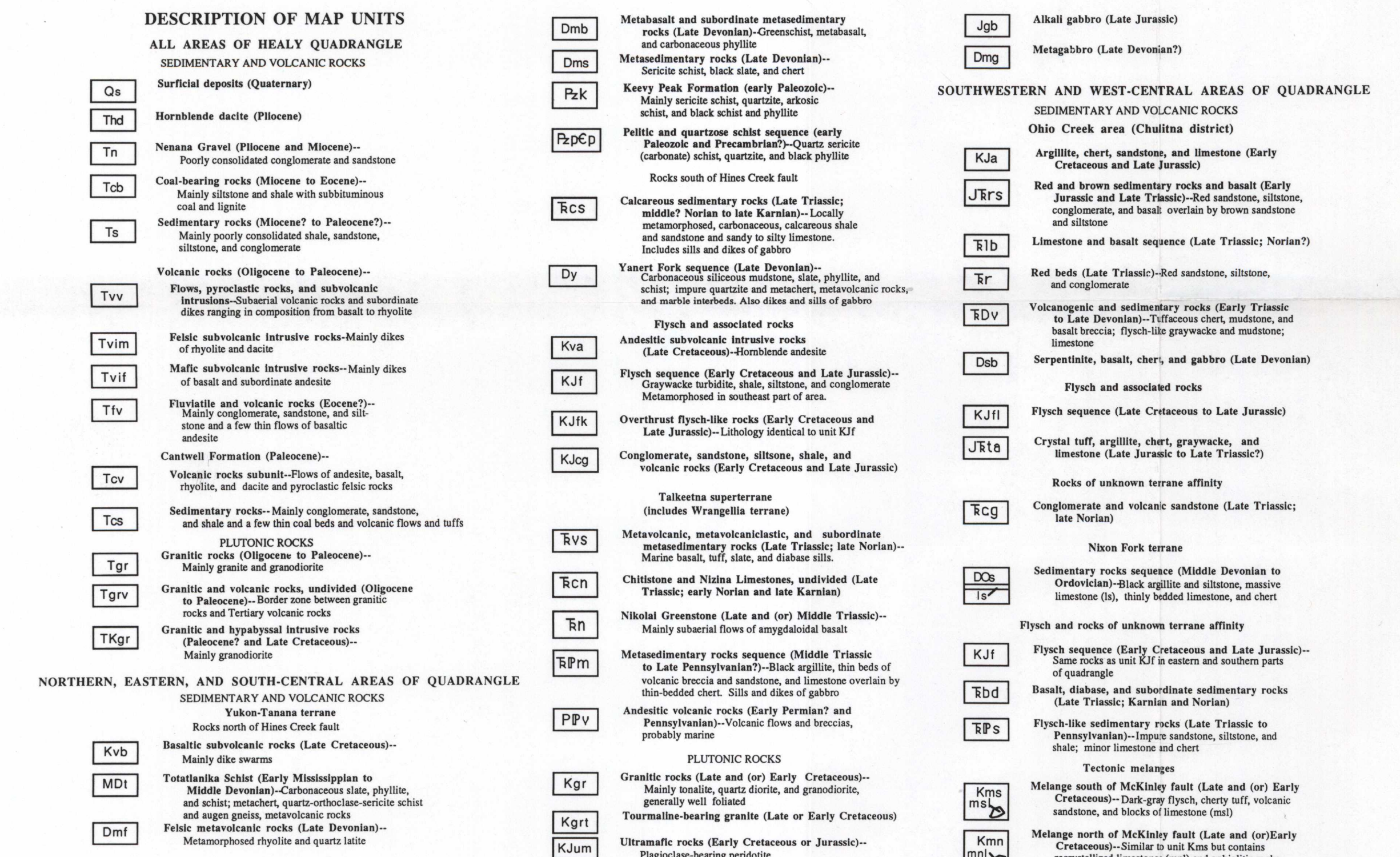











Figure 2.--Histograms for selected elements in heavy-mineral-concentrate samples from the Healy quadrangle. Data from six-step semiquantitative spectrographic analysis; N, not detected; L, detected but below the lower limit of determination; >, greater than. Dashed lines separate subsets of samples plotted on map A; the vector-plot symbol used on the map and the number of samples are shown for each subset.

Table 1.--Statistical summary of analytical data for heavy-mineral-concentrate samples from the Healy quadrangle, Alaska

[All analyses by semiquantitative emission spectrography; Fe, Mg, Ca, and Ti data in percent, all other data in parts per million; statistics based on unqualified values only, except percentiles calculated after replacement of qualified data; N, not detected; L, detected but below the lower limit of determination; G, detected but above the upper limit of determination; <, less than]

Element	Minimum	Maximum	Arithmetic mean	Standard deviation	Geometric mean	Geometric deviation	Percentiles			No. of qualified values	Detection ratio	
							90th	95th	98th			
Fe	0.2	70	5.5	5.7	3.8	3.1		30	30	2	63	0.94
Mg	0.7	7.4	0.7	0.3	0.1	1.5	2.0	2.0	0	13	0	0
Ca	1	20	3.2	2.5	2.1	2.8		7	10	5	0	0
Ti	0.2	1.2	1.2	1.7	1.5	1.5		15	5	8	88	2.3
Mn	20	500	600	600	420	2.5	1,000	1,500	1,500	0	6	99
Al	60	60	60	60	60	60	60	60	60	556	0	45
As	500	10,000	2,200	2,200	300	3.5	2,000	5,000	15,000	713	68	34
Se	100	200	120	130	92	9.2		5	12	972	13	9
B	20	500	220	400	84	3.2	500	850	1,500	640	1	196
Si	2	5,000	1,400	1,380	1,940	3.8	1,000	7,000	2,000	12	3	401
Be	80	500	8.0	4.4	1.6	1.9		70	2	535	35	10
B1	20	1000	130	180	9.6	2.4		30	70	885	31	12
Co	50	500	60	60	60	60	60	60	60	20	0	0
Cu	10	10,000	70	120	32	3.1	200	200	200	24	1000	0.85
Mo	10	500	330	360	160	1.6	1,500	1,500	1,500	0	99	0.77
Ga	10	20,000	330	700	110	4.4	700	1,000	2,000	13	38	0
Ag	100	200	100	100	100	100	100	100	100	19	21	89
Mo10	70	70	70	70	3.9	1.9		15	30	862	74	0
W	10	100	30	40	4.5	4.6		5	10	413	0	10
W1	10	1,500	140	190	60	3.7	300	500	700	53	19	0.93
Pb	20	15,000	570	1,300	120	3.5	1,500	2,000	2,000	20	75	1
Sb	30	300	300	300	300	300	300	300	300	10	100	0.91
Si3	10	100	30	30	30	30	30	30	30	136	58	0.91
Sc	10	100	30	23	17	2.6		85	100	136	58	0.91
Sc	10	100	30	23	17	2.6		85	100	136	58	0.91
W	100	500	580	445	390	2	500	1,000	1,000	66	82	0.86
Sr	200	500	580	445	390	2	500	1,000	1,000	66	82	0.86
W	100	500	580	445	390	2	500	1,000	1,000	66	82	0.86
W1	100	500	580	445	390	2	500	1,000	1,000	66	82	0.86
W	100	500	580	445	390	2	500	1,000	1,000	66	82	0.86
Zn	500	1,000	900	230	230	2.0	1,000	1,500	2,000	743	75	2
Zr	500	1,000	900	230	230	2.0	1,000	1,500	2,000	743	75	2
Th	20	500	884	93	2.2	1,500	500	1,000	1,000	85	10	831
Th	20	500	884	93	2.2	1,500	500	1,000	1,000	85	10	831

¹Detection ratio = No. of determinations divided by No. of samples analyzed.


 Crest—Apparent dip of fold overturned thrust fault. Dashed when inferred, dashed when concealed. Tapering on upper plane.

 High-angle reverse fault—Dashed when inferred, dashed when concealed. Tapering on upper plane.

 Fault—Dashed when inferred, dashed when concealed. When displacement known, U, upthrown side; D, downthrown side; area indicated by horizontal movement.

 Potential pinch-out—Dashed when inferred, dashed when concealed.

 Anticline—Showing direction of dip of axis and plunge.

 Anticline—Showing direction of dip of axis and plunge.

 Syncline—Showing direction of dip of axis and plunge.

 Anticline—Showing direction of dip of axis and plunge. Dashed when inferred.

 Anticline—Showing direction of dip of axis and plunge. Dashed when inferred.

[illegible]

REFERENCES CITED

Cox, D. P., Light, T. B., Cawley, B. L., and Campbell, D. H. 1982. Mineral resources of the Healy quadrangle, Alaska: U.S. Geological Survey Miscellaneous Field Studies Map MF-1550, scale 1:250,000.

Cawley, B. L., Jr., Cox, D. P., Evans, R. C., Stricker, D. C., Foster, H. L., 1982. The Genotse Nene fault system as a tectonic boundary of great significance to the geology of Geophysical Research, v. 87, No. 85, pp. 3741-3754.

Cawley, B. L., McLaughlin, J. W., and Campbell, D. H. 1983. U.S. 1:250,000 scale, 7.5' x 7.5' quadrangle, Alaska: U.S. Geological Survey Miscellaneous Field Studies Map MF-1550, scale 1:250,000.

Cox, D. P., Light, T. B., Turner, S. L., Waharritz, G., Graden, C., Kneer, W. N., Sherwood, W. J., Holmberg, R. C., and Cawley, B. L., 1983. Geology and geochronology of the Healy quadrangle, Alaska: U.S. Geological Survey Miscellaneous Field Studies Map MF-1550, scale 1:250,000.

Cawley, B. L., Jr., Mullen, K. V., Cox, D. P., and Stricker, D. C. 1983. Geology and geochronology of the Healy quadrangle, south-central Alaska: U.S. Geological Survey Miscellaneous Investigations Series Map I-1961, scale 1:150,000.

Grimes, D. J., and Marcantonio, A. P., 1968. Direct-current or alternating-current spatial-satiation spectrographic field methods for the quantitative analysis of geologic materials. U.S. Geological Survey Circular 901, 6 p.

King, B. L., Light, T. B., and O'Leary, R. M., 1989. Distributed selected elements in stream-sediment samples from a reconnaissance geochemical survey of the Healy quadrangle, Alaska: U.S. Geological Survey Miscellaneous Field Studies Map MF-2028, scale 1:250,000.

Light, T. B., Tripp, R. B., and King, B. L., in press. Interpretation of reconnaissance geochemical data from the Healy quadrangle, Alaska: U.S. Geological Survey Bulletin 1488.

O'Leary, R. M., Hoffman, J. D., Saitley, S. J., and King, B. L. Analytical results and sample locality map of stream-sediment and heavy-metal-concentrate samples from the Healy quadrangle, Alaska: U.S. Geological Survey Open-File Report 89-10, 123 p.

VanPump, George, Jr., and Miesch, A. T., 1977. The U.S. Geological Survey MASS-TRANSFORM: A computer program for the reduction of geochemical data: Computer and Geoscience 3, 27-37.

Figure 2.—Histograms for selected elements from *silv-test* sensitive to the lower limit of discrimination. γ = greatest vector-point symbol used on the map.

Table 1.—Statistical summary

[All analyses by quantitative analysis statistics based on unequal cell values; detected but below the lower limit of γ .

Element	Minimum	Maximum	Arithmetic mean	Standard deviation
Fe	0	2	5.5	1.0
Mg	0	5	7.0	1.0
Ca	-1	20	3.2	1.0
Al	0	10	6.6	1.0
Mn	20	5,000	600	1.0
K	0	7,000	400	1.0
Na	500	10,000	2,200	1.0
As	20	500	120	1.0
S	0	5,000	200	1.0
Ba	50	1,500	1,400	1.0
Sc	2	500	200	0.0
Pt	20	1,000	130	1.0
Cd	50	300	80	1.0
Co	10	2,000	70	1.0
Cr	20	5,000	320	1.0
Ca	10	1,000	330	1.0
La	50	1,000	300	1.0
Mo	10	700	30	1.0
U	50	300	100	1.0
Ni	10	1,500	140	1.0
Pb	20	15,000	570	1.0
Si	200	3,000	530	1.0
Sc	10	100	100	1.0
Sn	20	1,000	210	1.0
Sr	200	5,000	580	1.0
V	10	1,000	160	1.0
W	100	5,000	600	1.0
Y	20	2,000	250	1.0
Zn	500	5,000	1,100	1.0
Zr	20	1,000	480	1.0
Th	200	2,000	600	1.0

Detection ratio = No. of determinant

[illegible]

values	Detection ratio ^a
63	0.94
0	0.98
0	1
888	0.13
6	0.99
0	0.95
34	0.97
9	0.95
1	0.96
401	0.60
0	0.13
3	0.12
0	0.02
0	0.88
0	0.97
0	0.95
21	0.89
0	0.10
0	0.52
0	0.93
1	0.91
0	0.03
7	0.61
86	0.37
1	0.95
0	0.99
0	0.14
8	0.98
2	0.20
831	0.20
9	0.10

MAPS SHOWING DISTRIBUTION AND ABUNDANCE OF SELECTED ELEMENTS IN HEAVY-MINERAL-CONCENTRATE SAMPLES FROM A RECONNAISSANCE GEOCHEMICAL SURVEY OF THE HEALY QUADRANGLE, ALASKA

By
Thomas D. Light, Harley D. King, and Stephen J. Sutley
1989